

The Infinite Machine

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How an Army of
Crypto-Hackers
Is Building
the Next Internet
with Ethereum

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his time working on Colored Coins, which made some of other cofounders wonder if he even wanted to be part of the team.

That time in Toronto was when everyone met Steven Nerayoff for the first time. Steven is an attorney who quit his job at a fancy New York law firm during the dot-com boom of the late 1990s. He dropped everything and moved to Silicon Valley, where he founded two internet companies to compete with eBay. After the internet bubble burst, Steven needed a break from Silicon Valley, so he moved back to New York in 2002 and started a third company, this time in the health care industry. The firm, Freedom Eldercare, was acquired by a private equity fund in 2008. Nerayoff continued on his founding spree and created an artificial intelligence company, meant to use cameras to alert cities for things like parking

tickets, trash collection, snow removal, and crime. Steven also traded gold futures in his spare time and thought “fiat money” was bound to collapse eventually. He says he had half his assets in cash and the other half in gold when the 2008 financial crisis hit, as he had listened to his libertarian friends’ warnings that a recession was coming.

When he heard about Bitcoin, the concept immediately made sense to him. He hired Jonathan Mohan, founder of Bitcoin NYC, as a Bitcoin mole. Mohan’s job was to be Steven’s eyes and ears on the ground, advising him on potential new investments. That’s how he’d heard about Ethereum’s crowdsale, and so there he was, sitting at a table where the first Bitcoin ATM in Toronto could be found, surrounded by the Ethereum crowd.

Steven explained to the group, some of them reflexively skeptical about

newcomers, that if they didn't do the sale correctly there would be legal consequences. He went over some of the basics with them about the different kinds of exemptions the SEC gave for listing securities, basically, procedures that companies and issuers could follow to raise money lawfully. Charles and Joe seemed well versed in the concepts, Steven thought, but the rest of the guys didn't understand a word he was saying. They had no reason to.

"Can you figure out how to do this?" Charles asked.

"Absolutely."

"How?"

"I have no fucking idea."

They all looked at him like he was crazy.

"Maybe I should say, I have no idea, but I'll figure it out. I just need some time," he said, and looked specifically at Vitalik and Charles. "I need you guys

to tell me you're going to give me time. If you give me time, I'll figure this out."

They agreed.

On those few days in Toronto, there was also a lot of talk about the unresolved Google versus Mozilla question. Would they be a for-profit company or a nonprofit foundation? By the end of the Toronto trip, that question was still up in the air for some, even though Charles, Joe, and Anthony thought the matter had been settled. To them, Ethereum would be a for-profit software company, which would build applications to run on top of the open source protocol. The GmbH company that Mihai had incorporated in Zug would be dissolved to give way to a new corporation owned by the eight cofounders. There would still be a foundation to manage the funds raised and give support to the open source protocol.

Back in New York, Steven approached a lawyer named Jeffrey Alberts, a partner at Pryor Cashman, one of the prestigious outfits with big-name clients known as white-shoe law firms. While a few firms had started to specialize in cryptocurrency companies, Pryor Cashman wasn't one of them at the time. But Alberts worked on white-collar defenses so he knew how the SEC tended to see things, and that's exactly what the Ethereum team needed.

The team also managed to get on the phone with Joseph Grundfest, who was SEC commissioner during the Reagan years in the late 1980s and had since moved on to teach at Stanford. They put the question to Grundfest: Do you think this is a security or not?

According to Charles's recollection, Grundfest said that if the Ethereum team really wanted to eliminate all uncertainty, they should ask the SEC

for a “no action letter,” but it was unlikely that the SEC would issue one, so their best option was to present the facts and circumstances to a law firm and get their answer to that question in writing. They could then demonstrate that their intentions were good, should the SEC ever raise concerns about their offering.

They retained Pryor Cashman and asked the firm for an opinion letter. The firm made it clear that it would write its opinion after independently researching the issue, and that it might very well conclude that ether is a security. If that happened, either Ethereum would have to give up on its token sale and go the traditional venture capital funding route, or they would have to find a way to exclude US investors. The team agreed on those terms and so started a process where they would have meetings and calls with the lawyers and the former SEC

commissioner that dragged on for several weeks, as they tried to define what ether is.¹

It was all Steven could think of. He looked at the few other crowdsales in the cryptocurrency space, but they didn't exactly fit what Ethereum wanted to do. Then he looked at SEC regulations on crowdfunding, but that avenue only allowed for a maximum of \$1 million to be raised. Then he studied all the SEC exemptions for securities offerings to find a safe home where Ethereum could plant its flag, but it wasn't fitting neatly on any of those. "Okay, so it doesn't fit any exceptions," he thought. "Great."

Next, he started thinking he could maybe make an analogy to something in the "real world." Something that worked like ether did, that could help him understand where this digital token fit. One key characteristic about ether is that it's not just a digital

currency used to transfer value. Ether is also used to pay for that transfer, and for any other operation performed by the Ethereum Virtual Machine using the unit called “gas.” To Steven, ether was much like a stamp needed to send a letter, or like the name “gas” suggests, like gasoline needed to fuel a car. He was thinking about these things one day walking along the leafy roads in his Long Island neighborhood when an idea started to form: Nobody would ever think of stamps or gasoline as securities. They’re goods, which have market prices, and can be bought and sold. Ether is pretty much the same. It’s a good that can be bought and sold. It’s made to serve a function on the Ethereum platform, not to be an investment, even if it’s sold in a process that may look a lot like an offering.

He met up with Vitalik that night and said, “I had this crazy idea. But I

want to make sure I'm thinking about this correctly."

"Okay."

"You have to have ether to send ether, right?"

"Right."

"And you need it to run the code behind decentralized applications."

"Yeah."

"I know you called 'gas' gas for technical purposes, but what if we said gas is legally like gas, the commodity?" Steven went on. "What if we say that what we're selling here is a product or good. It has functionality, it has utility. So, effectively, people are paying for this ability to send ether and eventually for the ability to build dapps and to fuel these dapps."

"That makes sense to me," Vitalik said.

With Vitalik on board, the next step was to bounce the concept off Joe Grundfest, whom Steven saw as a legal

godfather to the process, even if he wasn't officially involved.

"So . . . I have this idea," Steven sheepishly said over the phone. He explained the concept of ether as a good, or utility, ready for Grundfest to say, "I don't know why I've been wasting my time with you, that's the stupidest thing I've ever heard," and hang up.

Instead, Joe agreed. Ether must have utility in the network to steer it further away from the securities definition.

Steven was really taken aback. This thing might actually work, he thought, and brought the concept to Pryor Cashman.

Grundfest said he ultimately gave the Ethereum team two pieces of advice. The first was to try to make ether immediately useful. It had to be code that would be used in a functional environment as quickly as

possible. The second was to avoid the United States, because there was the risk that ether would be viewed as a security.

Meanwhile, the developers were getting anxious. The cofounders had a weekly or sometimes twice-a-week Skype call where they would update the group on everyone's progress. Charles and Joe were usually the ones to update the group on the progress with the New York lawyers. When they told them Pryor Cashman was looking into the "utility token" concept, Gavin knew what was coming.

"So another two weeks?"

He was getting increasingly annoyed that there was this continuous pushing back of the sale by two weeks. They had been waiting since February, which had been delayed to get the Swiss lawyers' opinion, and now it was being delayed again to hear what the US lawyers had to say. Meanwhile,

helping shape this next version of the internet.

As they got closer to the crowdsale, Gavin was anxious for the team to focus on delivering the platform, and he identified Berlin as the perfect place to set up a development hub. It was an up-and-coming city, with lots of technical talent, and lower labor and housing costs than other big cities. Gavin convinced his friend Aeron Buchanan, the one he had also done the board game and music visualization startups with, to help him set up an office in Berlin. They packed their bags, including a bicycle, into the back of a car and made their way from London to Berlin.

Back in New York, Steven, Charles, Vitalik, and other Ethereans sat at a bar when they got the long-awaited email from the offices of the Pryor Cashman. At last, their law firm's opinion letter had arrived:

“We are of the opinion that, while there is no guarantee of outcome or result, a court ruling on this issue, under existing reported decisional authority, would more likely than not regard the Ether pre-sale not to be an offering of securities subject to Section 5 of the Securities Act,” the draft of the letter said, referring to the section that makes it unlawful to sell a security without registering it with the SEC.

In a supporting document listing the firm’s facts and assumptions, the lawyers wrote that they expected that the Ethereum Foundation “will promote the exchange of ether in a manner consistent with the distribution of a product, and not as a speculative investment,” and that it won’t make any commitments to potential presale participants to continue developing or maintaining the Ethereum platform after the creation of the genesis block.

Finally, the months of work had paid off. The opinion letter meant a big, serious law firm believed they wouldn't break securities laws if they proceeded with their crowdsale. The letter gave them enough protection, or at least perceived protection, to raise the money that would allow them to build the project they were dreaming of.

The framing in that letter, that ether was a product with a specific functionality, opened the door for a whole new way of raising money. Now startups would be able to get funding from anyone who wanted to contribute, all over the world, under what seemed like a safe haven. They weren't selling securities. These weren't shares in any company. They didn't give out dividends that depended on the company's revenue and investors didn't have any rights. They were selling digital tokens, made

to be used inside these platforms. They were selling utility tokens.

Pryor Cashman was the first major law firm to put out an opinion letter for a crowdsale to be done by a cryptocurrency company, which other firms saw as a green light. By early 2017, opinion letters such as this one would clear the way for one ICO after another.

“What?” Jeremy said, startled.

“Are you a *friend*,” someone else repeated, emphasizing.

“Um, yeah, sure, guys,” Jeremy answered, and looked away, pretending to be engrossed in the movie.

Suspensions grew into increasingly outlandish conspiracy theories on one of the Slack channels the Ethereum team shared. Steven considered some of the comments to be lightly veiled anti-Semitism. Amir was accused by some of belonging to Mossad, while some suggested that Charles was probably with the National Security Agency (NSA) and would turn Ethereum over to Goldman Sachs.

Vitalik happened to be staying and working from Steven’s home in Long Island, as he often did when he stopped in New York, when these messages were sent.

“Hey V, did you see what’s going on in the chat?”

Vitalik walked over and didn’t answer when he saw the messages, but his face turned red and his usually peaceful eyes lit up with anger. Without saying anything, he got his laptop, stood up, went into another room, and started typing.

“No need for those accusations,” he wrote. “Ethereum is user agnostic. If banks want to use it, then that’s great.”

But it didn’t matter how badly Vitalik wanted everyone to get along. A dark undertone kept surfacing in the group chats, and he was getting increasingly frequent calls from Taylor, Mathias, Stephan, and Mihai complaining about Charles.

One night, Taylor and Mihai got on a Skype call with Stephan and Mathias, who had moved to the office in London. It was dark in the Zug house and everyone else was sleeping. The

“Ethereum killers” is one of the few topics that can prompt Vitalik to drop his mostly peaceful demeanor. He said at a conference that projects like EOS are “centralized piles of trash.” Responding to a tweet by Tron founder Justin Sun, where he listed the reasons why his blockchain was better than Ethereum, Vitalik joked that Sun had copied Ethereum’s white paper.

[Reason number] 8. Better white paper writing capability (Ctrl+C + Ctrl+V much higher efficiency than keyboard typing new content).

Ethereum would get an advantage to all the upstarts. In June the director of the SEC’s Division of Corporation Finance, William Hinman, said he considers ether not to be a security. Digital tokens aren’t in themselves securities, but the way they’re sold can be, and most often are, securities

offerings, he said in a conference. That had been said by SEC officials many times before, but what was new about Hinman's statements was that he said the networks that digital tokens are built on can become decentralized enough over time so that the digital asset stops being a security, even if it was when it was sold. In the case of bitcoin, he said, the network on which it functions "is operational and appears to have been decentralized for some time, perhaps from inception." Putting aside the crowdsale, he said in the "present state of ether, the Ethereum network and its decentralized structure, current offers and sales of ether are not securities transactions."

Hinman had clarified that in his opinion, bitcoin and ether aren't securities and trading those cryptocurrencies wouldn't break any laws. No other cryptocurrencies

were included in the statement. It wasn't clear whether SEC officials think Ethereum's crowdsale wasn't an unregistered securities offering, just that the platform and ecosystem was decentralized enough that it didn't rely on a third party at that moment.

Steven Nerayoff, who helped come up with the term "utility token" and get the opinion letter from Pryor Cashman, was on a retreat in Israel with employees and investors of his crypto fund Alchemist when Hinman made those statements. They were on a bus near the Masada ruins when Steven's nephew, who works with him in the fund, saw the news.

"Steve! Ether's not a security!" he said, grabbing him by the arm and shoving his phone up to his face.

"Thank God!" he said. It was very appropriate that they were in the Holy Land.